

IN THE CLAIMS:

1. (Currently Amended) A contact inspection method for inspecting vibration conditions of a recording and reproduction device, the device comprising:

a magnetic disk (1)[[,]] ;

a slider (2) having a head for recording data to or reproducing data from the magnetic disk (1); and

a suspension (4) mechanically connecting the slider and a slider-holding mechanism;

wherein a first detection element (12) is attached to the magnetic disk, and

a second detection element (12b) is attached to the slider;

~~based on detection outputs from a detection element (12) attached to the magnetic disk (1) and a detection element (12b) attached to the slider (2), the magnetic disk (1) being rotatable, the slider (2) having a head for performing at least one of recording and reproduction on and from the magnetic disk (1) and pressed toward the magnetic disk (1) by the suspension (4), the suspension (4) being held by a slider holding mechanism, the magnetic disk side detection element (12) being attached to the magnetic disk (1) to detect vibration of the magnetic disk (1), the slider side detection element (12b) being attached to one of the slider (2), the suspension (4) and the slider holding mechanism, wherein the method comprises~~ comprising:

detecting a detection output from the second detection element only;

detecting a detection output from at least the first detection element;

determining a peak of each detection output, the peak being a maximum value of the detection output;

~~obtaining~~ determining a first time difference between when a maximum value the peak  
of the detection output from the ~~magnetic disk side~~ second detection element only (12) is  
detected; and

determining whether a maximum value the peak of the detection output from the ~~slider-~~  
~~side~~ second detection element (12b) is detected before or after the first time; and

determining a ~~condition-type~~ type of contact between the slider (2) and the magnetic disk (1)  
[[;]]~~evaluating intensity of the contact between the slider (2) and the magnetic disk (1); and~~  
~~detecting vibration due to the contact between the slider (2) and the magnetic disk (1) out from a~~  
~~plurality of kinds of vibration.~~

2. (Currently Amended) The contact inspection method according to claim 1, wherein effective values of the detection outputs from the ~~magnetic disk side~~ first detection element (12) and the ~~slider side~~ second detection element (12b) are calculated based on the detection outputs from the respective detection elements, and the ~~time difference is obtained~~ type of contact is determined based on the calculated effective values of the detection outputs.

3. (Currently Amended) The contact inspection method according to claim 1, wherein envelopes of the detection outputs from the ~~magnetic disk side~~ first detection element (12) and the ~~slider side~~ second detection element (12b) are calculated based on the detection outputs from the respective detection elements, and the ~~time difference is obtained~~ type of contact is determined based on the calculated envelopes of the detection outputs.

4. (Currently Amended) The contact inspection method according to claim 1, wherein the detection output from the ~~magnetic disk side~~ first detection element (12) is connected to a rotary transformer (33h) fixed to the magnetic disk (1), and the rotary transformer (33h) has an input impedance which is higher than the impedance of the first detection element (~~12~~) in at least a portion of an effective sensitivity band in which the first detection element (~~12~~) has a sensitivity not lower than 1/10 of its a maximum sensitivity of the first detection element.

5. (Currently Amended) The contact inspection method according to claim 4, wherein when the impedance of the first detection element (12) is  $Z1$  and the input impedance of the rotary transformer (33h) is  $Z2$ , and an effective sensitivity band reaches a lower limit frequency when  $Z2 > 0.5 \times Z1$  ~~is established at the lower limit frequency of the effective sensitivity band~~.

6. (Currently Amended) The contact inspection method according to claim 4, wherein when the impedance of the first detection element (12) is  $Z1$  and the input impedance of the rotary transformer (33h) is  $Z2$ , the first detection element operates at a frequency providing maximum sensitivity when  $Z2 > Z1$  ~~is established at a frequency at which the detection element has the maximum sensitivity~~.

7. (Currently Amended) The contact inspection method according to claim 4, wherein an electrical circuit including the first detection element (12) and a rotor-side coil (33g) of the rotary transformer (33h) has a resonance frequency within the effective sensitivity band of the first detection element (~~12~~).

8. (Currently Amended) The contact inspection method according to claim 4, wherein the first detection element (12) is a piezoelectric element, and

an electrical circuit including the first detection element (12) and a rotor-side coil (33g) of the rotary transformer (33h) has a resonance frequency within a range in the effective sensitivity band in which the first detection element piezoelectric element (12) has a sensitivity not less than 1/10 of ~~its~~ a maximum sensitivity of the first detection element.

9. (Currently Amended) A contact inspection device comprising:

a rotating magnetic disk (1);

a first detection element attached to the magnetic disk for detecting vibrations of the magnetic disk;

a slider (2) having a head for ~~performing at least one of recording data to and reproduction on and from~~ reproducing data from the magnetic disk; ~~(1) and pressed toward the magnetic disk (1) by~~

a slider-holding mechanism;

a suspension (4) connecting the slider to the slider-holding mechanism;

~~a slider holding mechanism for holding the suspension (4); a magnetic disk side detection element (12) attached to the magnetic disk (1) and detecting vibration of the magnetic disk (1); and a slider side~~

a second detection element (12b) attached to one of the slider (2), the suspension (4) and the slider holding mechanism;

~~the contact inspection device inspecting vibration conditions of the magnetic disk (1), the slider (2) and the suspension (4), based on detection outputs from the magnetic disk side detection element (12) and the slider side detection element (12b), wherein the contact inspection device further comprises~~

a measurement device for ~~obtaining a time difference between~~ determining whether a maximum value of ~~the detection an~~ output from the magnetic disk side first detection element (12) ~~and is detected before or after~~ a maximum value of ~~the detection an~~ output from the slider side second detection element (12b), thereby determining a vibration type in order to detect vibration due to contact between the slider (2) and the magnetic disk (1) out from a plurality of ~~kinds of vibration types~~.

10. (Currently Amended) The contact inspection device according to claim 9, further comprising a mechanism for directly loading the slider (2) onto the magnetic disk (1) or directly unloading the slider (2) from the magnetic disk (1), wherein the measurement device performs measurement ~~in~~ during a direct loading process or direct unloading process.

11. (Withdrawn) A contact inspection device comprising: a magnetic disk (1) fixed on a rotary holding mechanism (3) and rotated; a slider (2) having a head for performing at least one of recording and reproduction on and from the magnetic disk (1); and a detection element (12) attached to the rotary holding mechanism (3) and detecting vibration of the magnetic disk (1); the contact inspection device inspecting vibration conditions of the magnetic disk (1), based on detection output from the detection element (12), wherein the rotary holding mechanism (3) has

a magnetic disk fixing portion constituted by an AE transmission flat plate (11) parallel to the magnetic disk (1) surface, and the detection element (12) is fixed on a surface of the AE transmission flat plate (11) opposite from the magnetic disk contact surface.

12. (Withdrawn) The contact inspection device according to claim 11, wherein the detection output from the magnetic-disk-side detection element (12) is connected to a rotary transformer (33h) fixed to the magnetic disk (1), and the rotary transformer (33h) has an input impedance which is higher than the impedance of the detection element (12) in at least a portion of an effective sensitivity band in which the detection element has a sensitivity not less than 1/10 of its maximum sensitivity.

13. (Withdrawn) The contact inspection device according to claim 11, wherein the AE transmission flat plate (11) and the magnetic disk (1) are maintained in pressure contact with each other by a device for fixing the magnetic disk (1) to the rotary holding mechanism (3).

14. (Withdrawn) The contact inspection device according to claim 11, wherein the magnetic disk contact surface of the AE transmission flat plate (11) has a surface roughness that is substantially the same as that of the surface of the magnetic disk.

15. (Withdrawn) The contact inspection device according to claim 11, wherein the surface roughness of the magnetic disk contact surface of the AE transmission flat plate (11) has a surface roughness of which average roughness is not more than 5 nm.

16. (Withdrawn) The contact inspection device according to claim 11, wherein a fluid film is applied at least to the magnetic disk contact surface of the AE transmission flat plate (11).

17. (Withdrawn) The contact inspection device according to claim 16, wherein the fluid film has a thickness that is larger than the surface roughness of the magnetic disk contact surface.

18. (Withdrawn) The contact inspection device according to claim 11, wherein a same lubricant is applied to the magnetic disk surface and the magnetic disk contact surface of the AE transmission flat plate (11).